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President—Sir ARTHUR MACNALTY, K.C.B., M.D.

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The Pre-History of Midwifery. [*Abridged*]

By I. HARVEY FLACK, M.D.

SOME years ago I began to collect material for a history of midwifery. It soon became clear that, as in every branch of medical history, there are individuals, periods, and phases about which whole libraries have been written. There are as many other periods about which there is little or no information and surprisingly little speculation. The longest and, to my mind, one of the most interesting of these periods is that which stretches backwards from the time of Soranus into man's pre-history. During this period women were presumably having babies. The birth-process was presumably much the same as to-day but the customs associated with it must have developed according to some pattern. I have been speculating as to the nature of that pattern. So much of the material on which these speculations are based is taken from Ploss, Bartels, and Bartels (1935) that I have indicated in the text only the few other authorities consulted. It may be assumed, therefore, except in the few instances attributed to other workers, that every thread in this speculative pattern is contributed by either Ploss or the Bartels. For example, they quote the Dyak legend of how midwifery began. This was originally recorded by Howell in 1906:

Kelili Badak Resa, whose wife was called Teburi, went into the jungle. Teburi was big with the child of Kelili. Kelili moved without noise seeking what food there might be. He came at length to the place of the *maias*. Unseen by the big monkeys Kelili watched. He saw what he had not seen before. A young female with a great belly was calling out with pain. She crouched upon the ground and her husband waited beside her. Kelili waited, waited for long till the birth was over, and Kelili marvelled for he saw how the husbands among the *maias* helped their wives at the birth of their young. All this he remembered and when the birth pains came to Teburi he helped her, doing all that he had seen the *maias* doing.

That is the Dyak story of how midwifery began. Every present-day savage tribe has the same kind of story, but they differ greatly in detail in different parts of the world.

In the beginning, when women gave birth to children, they might or might not be helped. Whether they were helped by men or by women or not at all depended on the degree of social development of the community. In the most primitive communities the woman remained alone and helped herself if she could. Her menfolk would welcome the child, especially a boy, but were quite indifferent to the process of bringing him into the world. Intuition—for want of a better word—would lead the primitive woman, as it does animals, to bear her young and to sever with her teeth the umbilical cord. It is likely that her labour was fairly easy.

Later, and this represented a not unimportant cultural advance, the husband no longer forsook the woman in labour, but remained with her and helped her, very much as Kelili is said to have done. This is what happens with the natives of the Brazilian interior. As soon as the woman feels that birth is beginning she lies on the ground. The husband stays with her and when the child appears he ties the umbilical cord. The tied cord he then bites through, leaving the placenta to be delivered in the usual way. The child he paints with red and black pigments before laying it ceremoniously in a specially prepared cot. Among

the Marquesas islanders on Nukahiva the husband severs the umbilical cord not by biting it but by means of a sharpened flint.

Indian women of the Caraya tribe, who have settlements on the Rio Araguya in Brazil, are delivered in the squatting position. The woman squats on her heels and grasps a post with her hands. The husband takes up the same position immediately behind her and with both hands presses down on the contracting womb. Much the same assistance is given by husbands to the women of Gorngay and Tungu on the Malayan islands of Kola and Kobroor, while among the Unmatjera, an aboriginal tribe of North Australia, the husband's duties begin as soon as he knows his wife is pregnant. He rubs grease into the skin of her abdomen and sings a ritual song which is intended to make the child big and strong.

Among the natives of the Sandwich Islands assistance is given by an old man rather than by the husband. The woman is delivered sitting on his lap, and this always takes place in public.

In a later phase of development the husband was not actively engaged in assisting at the labour but had a symbolic role to play. In Guiana and among certain Caribbean tribes the husband takes to his bed and groans terribly to inform everyone of the pain he is sharing. Marco Polo observed the same custom in China six hundred years ago.

The next stage of cultural development excludes the husband completely and regards parturition as an exclusively female concern. Not so much from modesty as we know it but for mixed magical and social reasons birth is a purely feminine business and a thing to be kept from profane male eyes. Almost always assistance is given by older women who have themselves experienced childbirth. In certain groups, especially the Maori, there is a strict order of precedence. Assistance must be given by the maternal grandmother, or if she no longer exists, then the paternal grandmother presides. Failing her, the mother-in-law comes next.

Among the Trobriand Islanders, whose society is matrilineal and patrilocal, the pregnant woman goes to her father's house for there she can be looked after by her mother and her mother's kinsmen. All the males leave the house but keep guard outside to prevent the approach of sorcerers. The husband helps in this duty but plays a very minor part.

Malinowski (1929) was never allowed to witness a labour but he was fairly fully informed about it by the men and women he studied for so long. When the first pains are felt the woman is made to squat on a raised bedstead with a small fire burning under it. The fire is "to make her blood liquid" and it probably helps to keep away evil spirits.

For the actual delivery the woman is seated on a mat on the ground. Her legs are apart and her knees raised and she leans back resting on her hands. Immediately behind stands a sister or other close maternal relative. She presses down on the woman's shoulders "so that the baby may fall out quickly". The mother of the woman receives the child but no attempt is made to assist its delivery. If labour is prolonged or difficult then there are charms and words to counteract the evil magic that is obviously responsible.

Only in the most difficult cases, according to Malinowski, "would the child be manipulated and even then, from what I gathered, very timidly and incompetently". For example, if there was delay in the delivery of the afterbirth, a stone would be tied to the umbilical cord, but no attempt was ever made at manual removal. The first month of the puerperium both mother and child spend in the house and again on a bedstead beneath which a small fire is kept burning. No men are allowed in the house during this period but the husband may approach the door and talk to his wife without actually entering.

Another step forward is taken when the women of the family give way to "experienced women" and these must be regarded as the forerunners of the first midwives. Formal payment of these "wise women" was a later development but it has always been customary among the wives of Borneo head-hunters to give them presents of some kind as a reward for their assistance. Among the Sudanese, the Abyssinians, the Bedouins, and the Kabyle, "experienced women" are always present at a birth and usually arrangements are made well beforehand for their attendance. The wives of Hottentots and Bushmen order their "wise women" well in advance and are delivered lying on the left side. Three or four women sit round the woman in labour and take it in turn to exert pressure on the uterus at each pain.

From "experienced women" to the first midwives proper is another long step and it is not unreasonable to assume that this step has been taken when we find a tribe has a special word for these women and one that connotes something much more than "experienced woman." On the Tenimber and Timor Laut islands *wata sitong* is the word, on the island of Ceram *ahinatukaan*, in Fiji *alewa vuku*, in the Philippines *mabutin gilot*, and among the Basutos *babele xisi*. It is the fact, too, that these more than experienced women were not only called in for the actual birth but might be consulted in early pregnancy, even though such consultation was almost invariably for an opinion as to the sex of the unborn child.

As to their knowledge of midwifery, it must have been very meagre and dictated entirely by experiences handed down by word of mouth. Certainly some of them practised thoroughly bad midwifery for some superstitious or other reason. Thus among the desert tribes of Algeria one of the functions of the midwife was to delay the birth of the child. As soon as the head appeared and the child was half out of the womb the midwife would seize it firmly and hold it in position for at least fifteen minutes. This meant that the unfortunate mother had an unhappy quarter of an hour but it also ensured that the child would benefit from the enlightening experience of being kept forcibly at that mystic threshold of existence half-way between being born and not being born.

Some midwives are known to have practised version in the case of a breech presentation, especially in the case of the Swahili who, in addition, exercised a reasonable cleanliness and refrained from unnecessary manipulation. They also removed all the pubic hairs of the mother just before labour. The hairs were singed off and never cut, which implies not a hygienic reason but a magical one. Demons who might obstruct the labour would tend to lurk in the pubic hairs and though demons could be burnt out they could not be cut out. Swahili midwives were paid by giving them some of the pregnant woman's garments.

In some primitive communities, however, the duties of the midwife would extend beyond the actual labour and into the puerperium. This was the case in Siam where the midwife would care for both mother and child during the period of sacrificial purification. The birth of the child was always followed by a month of penance for the mother. For thirty days, five days in the case of subsequent children, she had to stay in the same special room and expose her naked abdomen and back to the heat of a fire which was kept burning night and day the whole time.

Among most pre-literate peoples special tabus, particularly about touching the ground or seeing the sun, relate to a woman who is menstruating. Even greater restrictions apply to the woman who has just borne a child. The Bantu regard menstrual blood as dangerous and puerperal blood as worse. But the blood from a miscarriage, and especially a concealed miscarriage is bad enough to cause droughts or famines. Frazer (1922) describes how an Australian aborigine discovered that his wife had lain on his blanket while she was menstruating. He killed her and himself died of terror within a few days. Aboriginal women are forbidden to touch anything that a man might use during the time they are menstruating. At childbirth all the clothes and vessels they use must be burned. Among many peoples the child-bearing woman, as in Siam, was regarded as dangerous to everybody. So she was secluded in some special hut for two or three weeks after labour. In the island of Kadiak, off Alaska, a woman who has borne a child is for twenty days so unclean that even her food has to be handed to her on long sticks. At a varying period after the birth purification rites are undertaken by the medicine-man and then the woman may resume her proper place in the tribe, free again from all the tabus.

Chinese women, for much the same reasons are steamed by their midwives all through the delivery and given a decoction of roasted human hair to drink. If the delivery is very painful a mixture of the excrement of bats with wild laurel and birthwort is given washed down with half a glass of urine which must be from a boy 3 or 4 years old. After delivery the patient is given a dish of dried afterbirth to eat and must have a fire underneath her bed for three days. The Chinese midwife feels the pulse in the middle finger of a pregnant woman to determine if the hour of birth is near. For her labour the woman is placed in a sitting position on a low bed with her back against the wall. Her feet are raised slightly on two bricks. As soon as the head appears the midwife knows the sex of the child—because a boy's head is always turned downwards, a girl's head upwards. The cord is cut with a red-hot iron rod and carefully preserved. The midwife continues to look after the mother for a month, taking care that no four-eyed person shall see her because this stops the flow of milk. A four-eyed person is a pregnant woman or her husband (Morse, 1934).

This then is as much as we can ever know about the beginning of midwifery. The process of birth was repeatedly observed and the simple and obvious things were done to help the woman in labour. Knowledge of these things was handed down, and normal births proceeded normally. Abnormal births were due to demons and where the demons were exceptionally powerful the midwives might reluctantly be compelled to call in the *shaman*. The belief on which the *shaman* worked was quite simple and was shared by most primitive peoples. Labour was supposed to be a voluntary act on the part of the child which was anxious to escape from its confined quarters. If the child was slow then it would be coaxed by the promise of food. If that failed it was threatened with dire penalties. A logical advance from this point was to take the woman out into the open and get a horseman to appear to ride her down. The charging horse turned aside at the last moment but the whole manœuvre which was popular among the American Indians was intended to frighten the child and make it hurry up its own delivery. If that failed then the woman would be laid

on her back so that her swollen abdomen might be jumped on, or she might be suspended from a tree while the enthusiastic midwives pulled down heavily on a strap round her abdomen and the *shaman* cheered them on.

The Hos of West Africa call a magician to aid the woman at any specially difficult birth. He says solemnly that the child is bound in the womb and so cannot be delivered. All the women entreat him to loose the bond. After some time he allows himself to be persuaded. Then creepers are brought from the forest and used to tie the woman's hands and feet. The magician takes a knife, calls the woman's name, and cuts through the creeper saying "I cut through thy bonds and the child's bonds". This is straightforward imitative magic and the same line of thought prompts the rule in many parts of the world that a woman in labour should have no knots near her person. All the knots in her garments and shoes are undone and all the locks in the house are solemnly unlocked.

In other pre-literate communities (Frazer, 1922) a rational approach may be combined with the magical. Thus among the Dyaks of Borneo any wizard who has to deal with a hard labour brings an assistant. Inside the birth-hut the wizard tries the obvious manipulations and tuggings, often with some success. Outside the hut his apprentice imitates the mother. A large stone is fastened to his belly by a cloth. This represents the child in the womb and, following the directions shouted to him from inside the hut, he moves the make-believe baby about, imitating exactly what is supposed to be going on in the process of birth.

So it was that men who had been excluded from the birth-hut returned to it, and sometimes if they were shepherds or swineherds they might apply to the obstructed labour the knives they had used on their animals. Carving up the child in the mother's womb and extracting it piecemeal was almost certainly the first phase of operative midwifery. The first step in operative gynæcology was removal of the ovaries which was practised by Indian and Australian natives. Himes (1936) quotes an account describing how the tribes living on the banks of the Condamine River operated on selected women, who were then turned over to all the men of the tribe. These tribes are also known to have attempted Cæsarean section.

So much and no more can be seen in the tribal mirror. We never can know the degree of distortion of that mirror. All we can do is to jump nearly a quarter of a million years and take up the earliest known writings of man. People who can write and record their customs are at an advanced stage of civilization, and there must be just as great an advance in their practice of obstetrics. The transition must have been long and probably slow, but its exact phases we can only guess at, remembering the enormous gulf that separates the unlettered savage from the priests and law-givers who committed to stone tablets and to papyri their laws and their customs.

Yet the savage and the lawgiver are descended from a common stock and the gulf between them is crossed over and over again by threads which show their unity. This is especially true of the customs relating to pregnancy and parturition.

In recent years obstetricians have been stressing the importance of posture in labour. Primitive women knew all about posture as an aid to easy delivery and automatically assumed the sitting, squatting, or kneeling position. Elaborations of these positions were the setting up of posts or crossbars to which the woman could cling. Only in civilized communities, and particularly after the discovery of anæsthesia, were women delivered in the recumbent position, which abandons one powerful factor in promoting the expulsion of the child, the pressure of the thighs on the abdomen. Now we are tending to return to the primitive postures because they were obstetrically effective (Jarcho, 1934).

Be it noted then as we turn from the mirror of tribal obstetric practice to the oldest written records we have that folklore is all of a piece the world over. If we find that Cleopatra's midwives were not very different from Queen Victoria's there is no need to attribute special prescience to the former or incredible conservatism to the latter. They were all women and they were handling the same problem. The process of birth has not changed, nor have the fears and joys to which it gives rise. But the customs surrounding it have become more specialized with the passing of time.

A careful study has been made by Derry (1935) of the bodies of five women of the 11th Dynasty, bodies that showed how well the *Taricheutae* had done their work. Menuhotep II reigned about 2050 B.C. The mummies are of five Nubian women who belonged to his harem. Two of them, Ashait and Henheit, must have died at the age of 22 or 23 years. The mummy of Henheit is so well preserved that it was possible to say why she died at this early age. She died as a result of a difficult labour which had torn both the vagina and the bladder so that a tear in the bladder communicated directly with the vagina. Two other mummies are of dancing girls and show extensive tattooing of the arms, legs, and feet, and of the lower abdomen just above the pubis. In addition there is a peculiar scar in

each case extending right across the abdomen and round the hips to end in a leaf-shaped area on each buttock. This scar must have been produced deliberately, possibly with a red-hot cautery, and may have been a brand indicating the slave status of these two girls. In all five mummies the pelvis is tilted forwards and its measurements correspond much more closely to those of the female ape than to those of European women, evidence perhaps that the changes in the female pelvis following the assumption of the upright posture were effected more slowly in the negroid races than in the women of the Mediterranean area.

A papyrus of about 2200 B.C. was discovered at Kahun and forms part of the Petrie collection. The text is fragmentary but lays down the rules for the diagnosis of pregnancy, stressing particularly the early vomiting of pregnancy and the condition of the breasts. The Ebers papyrus, written about 1560 B.C. (Bryan, 1930), gives the same rules much more fully. It also describes methods for accelerating the birth and methods for inducing abortion. How to determine the quality of the milk of a nursing mother is the subject of one brief section which goes on to discuss disorders of the female breasts. "If the milk be good it smells like the pollen of the VAH—grain; if the milk be bad it smells like the entrails of the Mehit fish." For treating a diseased breast there was a plaster of Calamine, Cow's Brain, and Wasp's Dung, which was to be applied for four days. There was also a magic formula addressed to the "Breast of Isis who in the City of Xebt bore the gods Su and Tefnut".

The vulva could be protected against the entry of disease by a douche of which Garlic and Horn-of-a-Cow were the main ingredients. If this failed and the vulva became inflamed the formula was changed to Bile-of-the-Cow, Cassia and Oil. If the condition grew worse a douche of Fresh Dates and Hog's Bile was the answer, and if in spite of everything pustules appeared in the vagina Fresh Dates in Ass's milk was needed.

A later part describes how the child's future may be foretold. If it cries *Ni* it will live. If it cries *Ba* it will die. It would also die if it "let a loud lamentation be heard", or if it "looks down its face", so that looking down in the mouth is not as recent an expression as might have been supposed.

A remedy to stop the crying of a child was:—

> "Pod-of-the-Poppy-Plant
> Fly-dirt-which-is-on-the-Wall.
> Make into One, strain, and take for four days.
> It acts at once!"

The Ebers papyrus also describes many of the diseases of women much more clearly than does the Kahun text and gives details of methods of treatment and prevention. Menstruation was regulated either by douches of Wonderfruit, Fennel, Honey and Sweet Beer or by douches of Garlic and Wine. The Dried Liver of a Swallow in Sour Milk would protect the virgin who anointed herself with it from leucorrhœa. A recipe "in order to cause that a woman should cease to conceive for 1 year, 2 years, or 3 years" included "tips of acacia" mixed with honey and applied to a piece of lint which was placed in the vagina (Himes, 1936). Dates, Onions, and the Fruit-of-the-Acanthus crushed with Honey and applied to the vulva would cause abortion. Strangely enough this is the only abortifacient mentioned. We do seem to have progressed in some directions.

There are, however, many methods of accelerating the birth of a child. "Peppermint: Let the woman apply it to her bare posterior," is the simplest, and was probably no less effective than any of the other treatments suggested. To correct a displaced womb The-Film-of-Dampness-which-is-found-on-the-Wood-of-Ships rubbed in Yeast-of-Fermented-Beer was taken by mouth.

The Brugsch papyrus of 1350 B.C. describes a number of contraceptive specifics and has a section—presuming the failure of the contraceptives—on the signs of pregnancy. The description of these signs is an expansion of those outlined in the Kahun papyrus seven hundred years earlier and the same signs in the same order and almost word for word reappear a thousand years later in the Hippocratic writings.

From these and other papyri, particularly the Gardiner papyrus, which is mainly gynæcological, it is known that girls were usually married at the age of from 12 to 14 years. Even younger girls were used to strengthen the failing powers of enfeebled patriarchs. At an advanced age Mohammed selected two more wives aged 7 and 8 respectively, to help restore his health. The belief that young girls radiated vitality was shared alike by Mohammedans and Jews. The excision of girls was also practised extensively. This involves removal with a sharp knife of the clitoris and most of the labia minora. Mohammed himself said "Circumcision is an ordinance for men and honourable in women" but he was merely approving what had been practised for hundreds of years. There is still in existence a plaque of about 163 B.C. which records the details of a legal suit to recover the costs of clitoridectomy.

Incidentally, as recently as 1945 I myself saw in Egypt a score of young women who had had this mutilating operation performed. This was not in the uncivilized reaches of the Western Desert but in the even more uncivilized slums of Cairo, the capital city. In these girls, and presumably the same has always applied, the operation appeared to have achieved its anatomical but not its physiological objective. In this instance even the custom has not altered very much in 3,000 years.

With the important part that sexuality played in the life of the women of Ancient Egypt, it is easy to understand the importance that was attached to the cosmetic care of the genitalia. These papyri contain innumerable prescriptions for pastes to be applied to the genitals and for fumigants, many of which were elaborately scented and perfumed. There were also a number of prescriptions for substances to be rubbed on to the male organ "for increasing the love of the wife for her husband". In some of the smaller chemist's shops in Cairo I have seen very similar medicaments rubbing anachronistic shoulders with sulphonamide tablets and penicillin lozenges.

The duration of pregnancy was known and in the seventeenth century B.C. Westcar papyrus instructions are given for calculating the expected date of delivery. It must be realized that to relate intercourse with pregnancy and determine the duration of pregnancy was a big step forward. Many primitive peoples know of no such relation. The Ingarda tribe in Australia believe that the child is a product of some food the mother has eaten. The Buduna tribe firmly believed that their women bore half-caste children because the white settlers had introduced bread made of white flour instead of the dark native bread. The women ate the white bread and therefore they had half-white children. Malinowski (1929) describes how the Trobriand islanders believe that pregnancy follows rupture of the hymen by whatever means and that intercourse is intended purely for pleasure and has nothing to do with procreation. Fatherhood is a social rather than a biological concept with most primitive groups. Other tribes believe that someone other than the socially recognized "father" sends an invisible spirit-baby to enter the woman. The sender in some tribes is called the child's *Wororu* and while the *Wororu* is often the father's brother it may even be his sister or some other female relative who wishes the spirit-baby on to his "wife".

This absence of knowledge of the exact part played by the male in conception is also shown by the contraceptive practices of certain pre-literate societies (Himes, 1936). One primitive group, the Dahomey in West Africa, use a particular root which is crushed and applied as a high intravaginal plug. The natives of the Kasai Basin in Central Africa plug the vagina either with a cloth or with chopped grass. In both these groups the contraceptive intention is clear and the practice is rational. Among many other pre-literate peoples, however, the intention is the same but the practice is irrational or magical. Isleta Indians in New Mexico obtained from the medicine man a specially treated buckskin belt. Worn continually this will ensure barrenness. Stepping three times over a recently buried corpse is believed by the Ait Sáddĕn of Morocco to prevent pregnancy. Drinking water which has been used to wash a dead person is equally effective. Eating the hoof-parings of a mule will render a woman as sterile as the mule. Or else the man should eat before intercourse the oviduct of a hen. If this has been tied into a knot pregnancy cannot possibly result. And of course almost every tribe has decoctions and potions to ensure infertility.

In most tribes normal labours were conducted entirely by women. The same custom applied in Egypt and is well shown in bas-reliefs of the Royal birth-rooms at Luxor and in other temples. One of the best known of these shows a queen of the 18th Dynasty. She is in labour on an obstetric chair and has four midwives in attendance. Another is a bas-relief at the Temple of Esneh which is believed to show the labour of Cleopatra. The queen is in a squatting position and is assisted by a group of five women, one of whom holds two ankhs or Tau-crosses, royal symbols of generation. The child is almost full-grown at delivery, another symbolic recording of royal power.

The Westcar papyrus mentions the special birth-chair. In its simplest form this consisted of two stones, one to support each buttock of the bearing-down woman. Wall pictures of lying-in rooms at Philae and at Dendrah show that it was the custom for women to have their labours in special houses, all of which were decorated with pictures of Isis, the birth-goddess, with little Horus in her lap. Sometimes the principal figure represented was the cat-headed Pacht, the god of parturition. In Isis were later merged all the other gods and goddesses connected with birth and with fertility, excepting only the one male god of fertility who is always depicted with an enormous phallus. The Westcar papyrus also contains the only reference in any of these papyri to the birth of triplets. The birth of twins was apparently fairly common.

Relatively little is known of Babylonian obstetrics. There are in existence a few tablets with cuneiform inscriptions which treat of congenital deformities such as hare-lip and cleft-

palate. There is also a reference to an abnormally long pregnancy of 11/12 months, which implies that 9 months was known to be the usual duration of pregnancy. Of normal births there is no record except a mention of the assistance given by a midwife who was designated "knower of the inside". Demons abounded in Babylon and might be good or bad. Ishtar was an essential demon and without her help the fœtus would die before delivery. Labartu was another female demon but of a different complexion and given to tearing children prematurely from the mother's womb, and to carrying a child-bed fever which often proved fatal. Suckling, either by the mother or by a wet nurse, was carried on for three years quite commonly and charms and amulets were used to promote this extraordinarily prolonged flow of milk. An interesting case described in one of the tablets is that of a wet nurse who had a cancer of the breast which caused her death.

Next to the Egyptian papyri in antiquity are the four Vedas of Brahma. Again these are Sacred Books but the author is not Thoth but Brahma and one book proceeded from each of his four mouths somewhere about 140 B.C. Later Brahma produced a second group of sacred books, the Upavedas, one of which is the Ayurveda, and this contains the oldest Hindu medical and surgical writings. The section we are most concerned with is the Charaka Ayurveda of 120 chapters, which was actually written in the second century A.D. Linked with it is the *Sushruta Samhita*, and though Sushruta was supposed to be the pupil of Charaka the *Samhita* clearly dates from about 600 B.C. The exact order of appearance of these works never can be known and it may well be that there was a version of the Charaka Ayurveda which preceded the Sushruta Ayurveda (Bhishagratna, 1907).

Leaving the legends on one side, these two works by Charaka and Sushruta reveal clearly the practice of the ancient Hindus in both obstetrics and gynæcology. Their knowledge of anatomy was very superficial although dissection was not forbidden. It was the technique of preparing a body for dissection that probably created some difficulties. The usual procedure was to leave the body for some days in a stream until it became putrid, then the skin was removed with a stiff brush and the parts examined. Even so there are some anatomical points of interest. In women there are "two canals, the roots of which are the uterus, and the *Dhamanee* vessels, which convey the menses. When they are wounded, barrenness is caused, and the menses cease". This seems to be one of the earliest references to the fallopian tubes.

Twenty-four diseases of the female organs of generation are described very sketchily. Typical examples quoted by McKay (1901) are:

Bandhyá: difficult menstruation. Rub the genitals and lower abdomen with oil and ghee, and keep the vagina distended by a roll of cloth.

Biplutá: continuing pain in the genital organs.

Pariplutá: severe pain during intercourse. A piece of cloth soaked in oil is to be kept in the vagina.

Prodokoh: excessive bleeding at the periods accompanied by fever, giddiness, fainting and thirst. Apply cold and astringent medicines; avoid venery; and live on cool simple food.

Patragani: when the infant dies, or abortion has taken place, with a great discharge of blood.

Palani: when a large man has connexion with a small and young female, he injures the parts and produces this disease.

Mahatí: when the vagina is very large.

In dealing with a difficult labour the obstetrician "having cheered the woman up" was told to use the knife but "in such a way that he by no possibility cuts a living child with it; for if a child is injured, the physician may destroy both child and mother together". For a normal labour Sushruta directs that the patient should be delivered by four women, "stout-hearted and of ripe age, who shall trim their nails well". These were midwives and were quite distinct from the women surgeons of a race in Rajputana, the Bhils. Their surgery was of the most primitive kind and consisted for the most part of applying a red-hot iron to cauterize anything and everything of which the patient might complain.

The *Sushruta Samhita* has also an excellent chapter on infant hygiene and nutrition and in this the purgative effect of honey on the newborn infant (sugar diarrhœa) is noted. Surgery is referred to at length and it seems that Cæsarean section was undertaken fairly often. Yet despite this advanced attack on the problem of obstructed labour the cause of the obstruction was still believed to be a demon. The *Rigveda* has an exorcism for such a demon, and in this as in other Indian charms the name of the demon is not spoken, and the appropriate god is called on to help: "May Agni, the destroyer of Raksha, joining in this prayer, drive away the disease of evil name which dwells in thy womb and bowels".

The duration of pregnancy was known to be ten lunar months and there were many ceremonies to guarantee a normal issue and keep away demons which might be hunch-

backed, fingerless, doublemouthed, and so on. All these demons tried to contort the unborn child to their own fearful shapes. Other "sealing spirits" were the demons responsible for female sterility. Phantom pregnancy was due to a special demon called *Naigamesa*.

The signs of approaching delivery were known and included the sinking of the belly, a feeling of heaviness in the abdomen, frequent passing of water, and a mucous discharge from the genitals. To expedite parturition the abdomen was to be pounded while the woman was made to walk about. Amulets would help and so would sneezing powders. Then at the end of the phase of dilatation of the cervix the child's head would press down more heavily, causing the bladder to be irritable and increasing the frequency of the pains. At this stage the midwives were enjoined to put the woman to bed and they were not to press on her abdomen except when she was having pains. Pressing down between the pains was not only useless but might make the child deaf, dumb, or deformed. Finally when delivery was effected the umbilical cord was to be tied with thread eight fingers-breadths' from the navel. The other end of the thread was passed round the child's neck and the cord was cut above the ligature. The afterbirth was awaited and once that had been delivered the woman's genitals were anointed with a special unguent.

The midwives undertook the handling of most normal deliveries but in any case of doubt a doctor was consulted and in unusual difficulty he could call in a sort of obstetric specialist. A doctor was always needed for anything other than a vertex presentation. If both legs presented then the fœtus would be drawn down gently by traction on the legs. If only one leg appeared, the other must be sought. If the breech presented it was to be pushed back so that the legs could be pulled down. A transverse presentation should be manipulated till the child's head could be brought down first as in a normal delivery.

When manipulation failed and the presentation was "irremediable" the doctor must resort to the knife. The skull was to be cut first and removed piecemeal, then the child's body could be extracted with a special pair of forceps. If this was not possible the head should be cut off and delivered in one piece by grasping the eye-sockets or the mouth. If the shoulders were stuck fast in the birth passage the child's arms must be cut off. These directions in the Sushruta are detailed and provide for every possible contingency.

The doctor was of course a priest and he was also responsible for consecrating the child's nurse, and for some reason this was always done on a Monday. High-caste women were always delivered by the priest-physician even for normal labours and delivery took place in a special birth-house which they entered some time during the ninth month. After delivery both mother and child were washed. The mother's milk for the first few days was not considered fit to use. When the priest approved she could start feeding her child and at the end of forty days or so she was regarded as free from "the uncleanness attached to her during confinement".

This period of forty days applied also to the women of Ancient Persia and in their case sexual intercourse during this period was regarded as a crime deserving death. The four midwives which Indian women expected were increased to ten in Persia, five to superintend the cradle, one for the left shoulder, one at the right, one to support the mother's neck, one to hold her fast round the middle and one to receive the child and divide the umbilical cord.

The Persians believed that there was a female as well as a male seed. If the male seed was stronger a boy would result, if the female a girl. If the male and female seed were equally strong then the woman would have twins or triplets. The references to female seed suggest that by this was meant the menstrual blood of which part was used for conception and the remainder flowed back into the woman and was converted into milk.

The Talmud makes it obvious that the Jews too had skilled midwives who were held in high esteem. The Talmud represents the oral law of the Jewish people. The text of the work is called the *Mishna* and the commentaries on it are the *Gamara* which were compiled during the first five centuries A.D. These midwives, or *Femina Vivida*, all seem to have used special stools or labour chairs. They examined the genitals with their fingers and occasionally with the whole hand, though this was discouraged. For their most difficult cases they called in doctors who were always Rabbis. These Rabbis vivisected female animals and knew that the womb could be removed without necessarily causing death. As a development of this experimental work it is believed that they undertook embryotomy and attempted Cæsarean section in the living as well as immediately after the death of a pregnant woman. They also made careful vaginal examinations and observed and described the hymen. The virgins of Judea till quite recent years were distinguished by a mincing walk and the tinkling of tiny bells. They all wore a chain of these bells just below the knees, and the explanation given for their use is that they confine the lower limbs within certain limits and do not allow of any striding or running, which might "rupture" the

maidenhead. Considering this wildly improbable explanation, which has been believed apparently for centuries, it seems clear that there must have lived in Judea at one time an erstwhile virgin sufficiently quick-witted to tell a good story and stick to it.

The biblical laws about menstruation are well known. The book of Leviticus contains the sternest mandates about the purifying of women after childbirth, about the hygiene of menstruation, the abomination of sexual perversion, and the prevention of contagious diseases, and notably of leprosy and gonorrhœa, if it was gonorrhœa. It is easy to interpret these laws as showing an advanced knowledge of public health and preventive medicine. This, however, seems to be a too rational and civilized interpretation of practices which were more likely to stem from irrational savage tabus. So far as we can follow primitive lines of thought the belief seems to have been that each man or woman had an inherent godliness which was at its best when intact. A flow of any kind from inside the body to the outer world—and this would include the lochia after parturition, menstrual fluids, and any genital discharge whether from the male or female organs—exposed the personal god to harm. The outer world was full of demons awaiting just such an opportunity and the harm that might result could easily affect other members of the community. Therefore a menstruating woman, a woman after childbirth, and a man or woman with "an issue" was tabu or "unclean" and to be avoided. The whole concept is animistic, which is not to say that continuing experience had not affected it, so that the periods of tabu were more exactly defined. The point to remember is that the prohibitions were tabus however exact the regulations that framed them.

Thus no explanation other than irrational tabu will fit the regulation that a woman who had given birth to a boy was unclean for seven times thirty-three days but a woman who had given birth to a girl was unclean for fourteen times sixty-six days. There is a basis of tabu and an overlay of Assyro-Babylonian numerology. The same numerologists laid it down that seventh days or multiples of seventh days were unlucky (*Dies Atra*), which may well account for the prohibition of all activity on the seventh day. Seven also recurs over and over again in connexion with men and women who have "an issue".

Jewish midwives, again like their Persian and Indian sisters, had goddesses to aid them. Ashtaroth who is mentioned in the Bible was also called Astarte and was known to the Babylonians and Assyrians as Ishtar. Pomegranates and doves as symbols of fertility were sacred to the Syrian Ishtar and the dove was regarded as a "bringer of children" which links Ishtar, the primordial mother goddess, with Mary to whom the Holy Ghost came in the form of a dove.

I began this far-reaching and inevitably incomplete survey by giving the legendary Dyak answer to the question: How did midwifery begin? Any other legend would have served as well. There is no hope now of finding anywhere Neolithic man and Neolithic woman in a state of nature, and only such a finding would give us the correct answer. The life of the most primitive tribes studied in recent times may approach more or less closely to the natural state, and a study of their obstetric habits is as near as we can get to the beginnings of midwifery.

Women must have been helped when their birth-pains came on from the earliest times, if only because their cries, whether exaggerated or not, awaken sympathy in even the most primitive peoples. Help by the husband, for want of the right primitive term, by other women in the same family, and later by experienced women, does seem to follow a progressive pattern, though here again we are just as likely to have got the pattern wrong as right. The change from the obvious crude mechanical assistance to experienced assistance is an appreciable advance, but the next step forward represents the difference between the Stone Age and the Iron Age, the change from the family of cave-dwellers to the organized communities of pastoral tribes. It is the change from *babele xisi* kneading a Basuto abdomen to the operative obstetrics of the priest-physicians of Egypt and India and Israel. Simple observation of the recurring natural processes of birth in women and in animals allowed the young savage woman to prepare for her own hour of need a simple procedure which would meet the normal contingencies. A rather wider formula for the actions needed to meet different circumstances would be known to the women who had seen many births and assisted many different women. That much we can follow fairly easily, but the next step is the important one and we know nothing about it. We know about *babele xisi* and about the priest physicians but we cannot know where one took over from the other. It may be that midwives became more experienced to the point at which knowledge began, knowledge of their own limitations. At that point they would seek help from the surgeons and physicians, the men concerned with the sufferings and the physical afflictions of mankind. That is a guess, but it will bear scrutiny. There were surgeons long before there were obstetricians, though there must have been midwives before there were surgeons. Whatever the

course of development there are no clear records of it. Development there must have been, unless we are to assume that Sushruta sprang fully-equipped from the womb of the Great Mother, but how it all happened cannot be known. Increasing observation led to certain customs and even to legal prohibitions and elaborate ritual. Then birth ceased to be something observed by the unknowing and became a subject for study. The study advanced more rapidly when men who had a surgical background and a wider culture were called in by midwives not as a last resource but in any case which promised to be difficult. However the transition came about it is true to say that for thousands of years everything that was done in obstetrics was done either by the midwives or by the surgeons. The surgeons would be women only rarely, only indeed at those few high peaks of civilization when women were given greater freedom and could become poets, or philosophers, or even doctors. The first such peak of which we have any detailed knowledge was the civilization of ancient Greece and there the midwives were skilled and the physicians and the surgeons more advanced than any that had been known previously.

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